additional or different stressors to the constituent modules of the group 30 or virtual oven 10. For example, a vibrator or radiation source could be applied to some of the virtual oven(s) 10 or logical group(s) 30 to apply vibration and/or radiation thereto while the ESSR(s) 5 apply a thermal cycle to these and other virtual ovens 10 and logical groups 30 therein.

Fig. 3 illustrates another concept of the present invention, which is to time-share test equipment 25 between different modules 15 of the same logical group 30. Such time-sharing of test equipment 25 is particularly advantageous when the test equipment is expensive or in short supply because it allows fewer sets of test equipment 25 to enable the system 1. For example, if the modules 15 are optical communication modules then the test equipment 25 may include very expensive test equipment (e.g. Tektronix® ST 2400 Test Set) costing tens or even hundreds of thousands of dollars per test equipment set.

To enable such time-sharing of test equipment 25, the virtual oven 10 includes a switch 35 interposed between the test equipment 25 and the logical group 30 of modules 15 under test. As will be further explained below in the operation section, during a first time period the switch 35 routes test signals between the test equipment 25 and the module 15 under active test. During this first time period, a second module 15 (labeled "module under passive test") is not connected to the test equipment 25. During a second time period, the switch 35 changes position and rotates the test cycle so that the module 15 previously under active test is now passively tested and vice versa.

Although Fig. 3 shows a two-pole switch 35 to accommodate two modules 15 under test, it is to be understood that more than two modules can time-share the associated test equipment 25. In addition, the invention may switch between different active tests instead

of or in addition to switching between active and passive tests. In other words, the test cycle rotation may be between different types of active tests, different types of passive tests as well as various combinations of passive tests and active tests.

Fig. 4 illustrates the preferred way of connecting the components of the virtual oven 10. In general, a network-based connection is preferred. Particularly, a burn-in network 20 serves as a backbone connecting a plurality of virtual ovens 10 and providing a pathway to the common database 40.

As further shown in Fig. 4, each virtual oven 10 includes an extension of the burn-in network 20 to which are connected a PC (personal computer) 50, a communications server 55 and a GPIB-ENET 70. A plurality of test equipment (labeled "instr 1, instr 2, etc") 25 are connected to the burn-in network 20 backbone via the GPIB-ENET 70. A module rack 65 and connectors 55 provides a way of physically loading the modules 25 into the virtual oven 10.

By using a network architecture such as the one shown in Fig. 4, each of the test instruments 25 is available to test any of the modules 15 loaded onto the module rack 65. Specifically, the burn-in network 20 backbone, communications server 55 and GPIP-ENET 70 are controlled by, for example, PC 50 to route active test signals between the test instrument 25 and the module 15 being tested.

Similarly, passive test measurement values may be routed from the modules 15 to the PC 50 and commands may be routed from PC 50 to the module(s) 15 and/or test equipment. The passive test measurement values may be gathered by the electronics on board of each module 15 and/or by sensors external to the module 15. These passive test measurement values vary depending upon the module 15 being tested but typically include

such things as temperature, current, voltage and other parameters internal to the module 15 being tested. The AMS controller 100 associates the particular passive test measurements (or evaluation thereof) with the current module 15 under test so that the database 40 may track the performance or failure of each module 15.

In contrast, the active test routes an active test signal to the module 15 which processes the test signal and sends a processed test signal to the PC 50. The active test is a functional test of the module 15 and the processed test signal sent to the PC 50 is indicative of the functions performed by the module 15.

Although the network architecture shown in Fig. 4 utilizes particular types of connections and protocols such as GPIB, Ethernet and RS232 it is to be understood that other types of connections and protocols are contemplated herein. A relevant point is that the test equipment 25, modules 15, controller (e.g. PC 50), and database 40 are disposed on a network architecture that can be controlled to route test signals, commands, and measurements as desired by the methods of the invention.

Fig. 5 shows another embodiment of the invention in which the virtual oven 10 subjects modules 15 to a burn-in test (graphically illustrated by the temperature cycle like the one shown in Fig. 2). In this case, the modules 15 under test are multi-channel optical communications modules capable of handling a plurality of channels. For example, the modules 15 under test may be multi-channel (e.g. DWDM) transmitters, receivers, remodulators, selectors or transceivers.

As further shown in Fig. 5, a multi-channel signal generator 110 generates a multi-channel signal 112, which is graphically illustrated therein. An optical splitter 120 connected to multi-channel signal generator 110 splits the multi-channel and provides the